

REMARKS

Claims 1-7 and 9-36 are pending in the application and stand rejected.

Rejection of Claims 18, 19 under 35 USC §103(a) over Smith '143 and Smith '013

Claims 18 and 19 stand rejected for obviousness over the Smith patent (U.S. Patent No. 4,802,143) in combination with U.S. Patent No. 4,567,013, issued to Smith. The Examiner contends that Smith '143 teaches all of the elements of claim 18, including that of determining a subsurface characteristic of a formation from detection of seismic energy imparted into the formation. Specifically, the Examiner notes that Smith '143 teaches determining mud pressure and considers this to be a "subsurface characteristic." She admits that Smith '143 does not teach detecting a subsurface geologic characteristic, but considers Smith '013 to teach this. She concludes that it would have been obvious to one of ordinary skill in the art to use Smith '143's apparatus to determine a geologic characteristic, as taught by Smith '013. She contends that the advantage of this would be to detect combustibility of a fluid.

Applicant disagrees and traverses the rejection on a number of grounds. The Smith '013 reference, entitled "Hydrogen Measuring Device" does not even relate to the field of the present invention or that of the Smith '143 reference. It is non-analogous art, and certainly does not teach the element of determining a subsurface geologic characteristic, as recited by claims 18 and 19. As a result, no combination of these references would reveal the subject matter of claims 18 and 19.

No portion of the Smith '013 reference, including those pointed to by the Examiner, discloses or suggests determining a subsurface geologic characteristic of a formation penetrated by a wellbore from detection of said seismic energy imparted into the formation, as claims 18 and 19 recite. Smith '013 describes a device used within a nuclear reactor to

measure the partial pressure of very small amounts of free hydrogen gas at various sites in the core of the nuclear reactor. See Smith '013, col. 1, lines 50-52. In the system of Smith '013,

[a] gamma thermometer in which the calibration is made insensitive to hydrogen by filling with a gas such as Argon is placed adjacent to a gamma thermometer which has been evacuated. . . . The difference between the indicated signal of the two gamma thermometers is the measure of the free hydrogen partial pressure.

Smith '013, col. 2, lines 21-34. Clearly, this device has nothing to do with subsurface geology or with seismic energy that is imparted into a subsurface formation. The Examiner is urged to remove the rejection and pass the claims to issue.

Rejection of Claims 1-7, 12, 13, 15-17, 21-24, 26 and 33-35 under 35 USC §103(a) over Smith '143, Cretin and Smith '013

Claims 1-7, 12, 13, 15-17, 21-24, 26 and 33-35 stand rejected for obviousness over a combination of the Smith '143, Cretin and Smith '013 references. As Applicant understands the rejection, the Examiner considers Smith '143 to teach each of the elements of these claims with the exception of 1) an anchor device engaged with the borehole at a selected location and 2) determining a subsurface geologic characteristic. However, she finds Cretin to disclose an anchor device engaged with a borehole and Smith '013 to teach determining a subsurface geologic characteristic. She concludes that it would have been obvious to one having ordinary skill to modify Smith '143's device to make the anchor device engaged with the borehole, as taught by Cretin. The advantage, the Examiner contends, would be to secure fastening of the apparatus to the borehole while seismic energy is being transmitted.

Applicant traverses the rejection. First, Applicant incorporates herein the arguments made previously with respect to the inability of a combination of Smith '143 and Smith '013

to reveal the subject matter of claims 18 and 19. As noted previously, the Smith '013 reference does not teach at least the element of determining subsurface geologic conditions.

Applicant also reasserts its earlier argument that it is improper to combine Smith '143 and Cretin in the manner that the Examiner has done. Cretin describes a static seismic system wherein a probe 8 is suspended within a borehole and anchored against one wall of the borehole by a mobile arm 10. See Cretin, col. 3, lines 55-60 and Figure 1. This arrangement is suitable for a seismic prospective operation (see, e.g., col. 1, line 49-col. 2, line 18) after a borehole has been drilled. However, it is not suitable for use during drilling, which is what Smith '143's arrangement is used for. Applicant submits that it would be infeasible to dispose Cretin's anchored probe within the borehole because the drilling string containing Smith 143's device would occupy the borehole. The presence of Smith '143's drilling string within the borehole would appear to preclude placement of an anchored probe at the same time. Thus, Applicant submits, a combination of the two devices is unobvious and likely infeasible.

Rejection of Claims 9-11, 14, 25, and 27-32 under 35 USC §103(a) over Smith '143, Cretin, Smith '013 and Nelson

Claims 9-11, 14, 25, and 27-32 stand rejected for obviousness over a combination of the Smith '143, Cretin, Smith '013 and Nelson references.

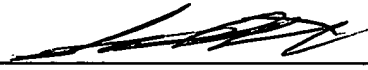
Applicant traverses the rejection. Applicant incorporates herein the arguments made above with respect to independent claims 1, 12, and 23 and Smith '143, Cretin and Smith '013 to render these claims unpatentable. Applicant submits that claims 9-11, 14, 25, and 27-32 should be patentable at least as depending from allowable base claims.

Conclusion

The Commissioner is hereby authorized to charge any fees deemed necessary for this response to **Deposit Account No. 02-0429 (284-15718-USCE)** maintained by Madan, Mossman & Sriram. The Examiner is invited to discuss this matter with Applicant's attorneys should any questions arise.

Respectfully submitted,

Dated: May 14, 2004



Shawn Hunter
Reg. No. 36,168
MADAN, MOSSMAN & SRIRAM, P.C.
2603 Augusta, Suite 700
Houston, Texas 77057
Phone: 713-266-1130 (x119)
Fax: 713-266-8510